

REMARKS

This communication is in response to the Office Action mailed on July 19, 2001. In the Office Action, claims 1-16 were pending. All claims were rejected.

Before addressing the specific rejections in the Office Action, the undersigned would like to remind Examiner Hamdan that an interview is requested in the event a Notice of Allowance is not issued. Please contact the undersigned to arrange the interview at the Examiner's convenience.

The Office Action first reports that claims 1-16 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite and unclear for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With this amendment, applicant has made amendments to the claims in order to enhance clarity and meet the requirements of 35 U.S.C. 112, second paragraph. Withdrawal of the rejection is respectfully requested.

The Office Action next reports that claims 1, 3, 4, 8-10, 12 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde et al. (U.S. Pat. No. 5,431,134) in view of Richeson, Jr. et al. (U.S. Pat. No. 4,109,630). Claim 1 is an independent claim and recites features of the present invention. Applicant hereby further maintains arguments of the previous Amendment and submit that the combination of Budde et al. and Richeson, Jr. et al. do not teach or suggest the claimed invention. In particular, Budde et al. teaches away from combining the references. From col. 1, l. 62 to col. 2, l. 22, Budde et al. explain problems with using a sensor responding to a TDC mark. Among the problems, Budde et al. claim it would be "not really practical," would "interfere with reliable operation of the engine," be expensive and require added work. Instead, Budde et al. specifically teach that a cone assembly is more

beneficial. Applicants note that prior art references must be considered in their entirety, including portions that teach away from the invention as explained in MPEP § 2141.02. Applicants fail to see how Budde et al. can suggest the features of claim 1 when viewed in its entirety. Although Budde et al. may teach a comparator (claim 1) it does not provide a sensor adapted to be secured in a timing port. In addition, Richeson, Jr. et al. teach comparing signals different from those in Budde et al. and the present invention. Richeson, Jr. et al. is an ignition system and does not provide any suggestion of combining with a timing device. Regardless, Richeson, Jr. et al. compares signals significantly different from the present invention and functions as an ignition system and not as a device for timing an ignition.

Independent claim 12 is an independent claim that recites a method according to the present invention. For reasons above, the cited combination simply does not render obvious the step of securing. Furthermore, claim 12 has been amended to recite the features of claim 14 and thus recites "filtering ignition sparks of compression strokes from ignition sparks of compression and exhaust strokes of a selected cylinder, the ignition signal being indicative of only the ignition sparks of compression strokes." This step of filtering solves a problem unique to dual fire ignition engines. In order to time an engine, the occurrence of sparks during compression strokes needs to be known. However, in Harley Davidson motors, sparks occur during the compression and exhaust strokes. Thus, "sensing an occurrence of an ignition spark and providing an ignition signal as a function thereof" and "filtering ignition sparks of compression strokes from ignition spark of compression and exhaust strokes of a selected cylinder, the ignition signal being indicative of only the ignition sparks of compression strokes" is beneficial when timing a Harley Davidson engine. These steps are simply not

taught or suggested by the cited art. The ignition system of Richeson, Jr. et al. creates an ignition spark and does not teach or suggest the steps of sensing or filtering as claimed. The filtering of Richeson, Jr. et al. is performed on positions of tynes in the sensor indicator and not based on the occurrence of ignition sparks. (Col. 7, ll. 42-44). Accordingly, claim 12 is believed allowable.

Furthermore, applicant hereby demonstrates that the present invention as claimed achieves unexpected results, serves a long-felt need and exhibits commercial success relative to the combination of Budde et al. and Richeson, Jr. et al. Applicant notes the Examiner's suggestion on pages 5 and 6 of the Office Action that suggests demonstrating unexpected results relative to the prior art according to *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Embodiments of the present invention as recited in claims 1 and 12 have received acclaim from motorcycle enthusiasts. Two independent articles reviewing the "Time Keeper" system point out the benefits and unexpected results of the present invention. The reviews from Hot Bike and American Iron Magazine were conducted independently. Ken Ross of Hot Bike magazine, notes "The Time Keeper from MST Instruments is the solution to achieving accurate timing while avoiding bathing in a spray of hot oil...". In addition, Fin Korhonen of American Iron Magazine professes that the Time Keeper "has the coolest, slickest, and most accurate (not to mention oil-free and easy as pie) way to time Harleys." In addition to demonstrating the unexpected benefits of the Time Keeper system, the Hot Bike and American Iron Magazine reviews demonstrate the long-felt need, commercial success and ease of use of the present invention.

Furthermore, claims 3 and 8-10, which recite means for filtering ignition sparks of compression strokes from ignition sparks of compression and exhaust strokes of a selected cylinder

and other embodiments for comparing an ignition signal to a threshold, are embodied in the Time Keeper system reviewed by both Hot Bike and American Iron Magazine. The means for filtering in claim 3 significantly add to ease of use and accuracy of the present invention and are different from the filtering performed by Richeson, Jr. et al. In particular, the means for filtering are particularly useful in determining a spark occurring relative to a compression stroke and provide a signal based on that for timing a Harley Davidson motorcycle. Accordingly, applicant submits that these claims are separately patentable. Claim 4, which recites a variable reluctance sensor, is taught away from by Budde et al. and is also believed separately patentable.

Claims 2, 5-7, 11, 13 and 15-16 were all rejected under 35 U.S.C. 103(a) as being obvious in view of the Budde et al./Richeson, Jr. et al. combination and further in view of either Luteran (U.S. Pat. No. 4,109,630), Dickmeyer et al. (U.S. Pat. No. 5,998,988) or Berardinelli (U.S. Pat. No. 5,814,723). Applicant submit that these dependent claims represent further patentable features when combined with their respective independent claims. In addition, the references cited do not teach or suggest features of the present invention claimed in the independent claims. As such, the dependent claims are believed to be allowable over the prior art.

Claims 21-27 have been added to the present application and recite a combination of a Harley Davidson motorcycle engine and an ignition timing device secured in a timing port of the engine that is believed allowable. The prior art simply does not teach or suggest the timing device recited therein to time a Harley Davidson engine. In particular, claim 23 recites the combination wherein the engine provides sparks indicative of both compression and compression and exhaust strokes and means for filtering are provided to filter the sparks.

Applicant also hereby submits amended figures 1, 7, 8, 9 and 10 under separate paper with a descriptive legend for box 16. However, applicant maintains that the descriptive legend is unnecessary.

In view of the foregoing, applicants respectfully request reconsideration and allowance of claims 1-16 and 21-27. Favorable action is requested.

An extension of time fee is enclosed herewith for consideration of the amendment.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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MARKED-UP VERSION OF REPLACEMENT CLAIMS

1. (Amended) An ignition timing device for timing an engine having a timing port and a timing mark indicative of a position of a movable member, the ignition timing device comprising:

a sensor adapted to be secured ~~securable~~ in the timing port to provide a timing mark signal indicative of presence of thea timing mark ~~of the engine proximate a variable reluctance sensor~~;

an ignition sensor adapted to provide an ignition signal indicative of the occurrence of an ignition spark;

a comparator receiving the timing mark signal and the ignition signal, the comparator providing an output signal indicative of substantial simultaneous occurrence of the timing mark signal and the ignition signal; and

an indicator receiving the output signal and operable as a function thereof.

12. A method for timing an engine having a timing port through which a timing mark indicative of a position of a movable member of the engine can be seen, the method comprising:

securing a variable reluctance sensor proximate the timing port;

sensing the presence of the timing mark of the engine with the variable reluctance sensor and providing a timing mark signal as a function thereof;

sensing an occurrence of an ignition spark and providing an ignition signal as a function thereof;

filtering ignition sparks of compression strokes from  
ignition sparks of compression and exhaust strokes  
of a selected cylinder, the ignition signal being  
indicative of only the ignition sparks of  
compression strokes;

comparing the timing mark signal to the ignition signal  
and providing an output signal indicative of  
substantial simultaneous occurrence of the timing  
mark signal and the ignition signal; and  
operating an indicator as a function of the output  
signal.